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HERNANDEZ, NELSON D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/071,915	LEE ET AL.	
	Examiner	Art Unit	
	Nelson D. Hernandez	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendments filed on 10/7/2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 9-32* is/are pending in the application.

4a) Of the above claim(s) *26-29* is/are withdrawn from consideration.

5)☒ Claim(s) *31 and 32* is/are allowed.

6)☒ Claim(s) *1,9-25 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Examiner acknowledges the amendments made on the claims received on October 7, 2005. Claims 1 and 9-11 have been amended. Claims 2-8 have been cancelled. Claims 12-32 have been newly added.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 9 and 11 have been considered but are moot in view of the new ground(s) of rejection.

3. In the previous action claim 10 was indicated to be allowable. However, the amendments made to the claim change the scope of the invention and upon further consideration, a new ground(s) of rejection is made in view of newly found prior art. Also newly added claims 30-32 which the Applicant contends that have been amended to include the limitations indicated before to be allowable if included in claim 1, includes the limitation of "a plurality of multi-camera modules" which changes the scope of the claim. Therefore this action in will be Final.

Election/Restrictions

2. Newly submitted **claims 26-29** are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claim 26 presents:

A method for acquiring 3-dimensional data the method comprising:

acquiring first images using a multi-camera module comprising multiple camera at a first location the optical centers of the multiple cameras being in a plane;

moving the multi-camera module from the first location to a second location;

acquiring second images using the multi-camera module at the second location;

searching corresponding points in at least one of the first images and in at least one of the second images;

extracting distance information for two corresponding points using trigonometry; and

acquiring 3-dimensional data based on the distance information.

While the invention previously claimed is directed to acquiring 3-dimensional data using a multi-camera module, newly added claim 26 is introducing the limitations of *"moving the multi-camera module from the first location to a second location; acquiring second images using the multi-camera module at the second location"*, which belongs to a different embodiments as shown in figs. 28 and 29.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 26 (26) withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 27-29 are also withdrawn since they depend on claim 26.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Monroe, US 2005/0207487 A1 in view of Ogiwara, US Patent 6,057,878.

Regarding claim 1, Monroe discloses an omni-directional image acquisition apparatus (Fig. 2), comprising: a plurality of multi-camera modules positioned along the direction of height (See figs. 3A and 3B), each of the multi-camera modules (See fig. 3B, rows A, B and C) including multiple cameras (Fig. 3, cameras 10a-10h) that are arranged such that the optical centers of the multiple cameras are in a plane (i.e. cameras in row A), the multiple cameras of the multi-camera modules being further arranged such that the optical axis of the at least one of the multiple cameras from a first multi-camera module of the multi-camera modules at a first height is pointing in the same direction as the optical axis of at least one of the cameras from a second multi-camera module of the multi-camera modules at a second height such that the optical axes are parallel (i.e. cameras 10c in rows A, B and C); and a vision computer system (MUX 13 with processor 16 as shown in fig. 2) operatively connected to each of the multi-cameras of the multi-camera modules, the vision computer system being configured to process and store images acquired by the multi-cameras (Page 5, ¶ 0090-0091; page 6, ¶ 0092; page 7, ¶ 0102).

Monroe fails to teach the image and acquisition apparatus as a 3-dimensional data acquisition apparatus.

However, Ogiwara teaches a 3-dimensional apparatus (See fig. 1 and 7), comprising: a plurality of cameras (See fig. 7: 2a-2h) arranged such that the optical centers of the multiple cameras are in a plane (See cameras 2a-2d in fig. 7) and further arranged such that the optical axis of the at least one of the multiple cameras from a first multi-camera module of the multi-camera modules at a first height is pointing in the same direction as the optical axis of at least one of the cameras from a second multi-camera module of the multi-camera modules at a second height such that the optical axes are parallel (See cameras 2a and 2e in fig. 7); a memory (Fig. 7: 3); and a 3-dimensional image display (Fig. 7: 4); wherein said 3-dimensional image display is configured to use the images captured by the multiple cameras to produce 3-D image data (Col. 5, line 38 – col. 6, line 45; col. 9, lines 1-24; col. 12, line 55 – col. 13, line 19).

Therefore, taking the combined teaching of Monroe in view of Ogiwara as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Monroe by using the multiple cameras to produce 3-dimensional image data. The motivation to do so would have been to provide 3-dimensional image data to be displayed without the need of complex signal processing devices and that can be observed in a wide angle of visibility as suggested by Ogiwara (Col. 2, lines 51-58).

Regarding claim 12, the combined teaching of Monroe in view of Ogiwara as applied to claim 1 teaches that the optical axes of the multiple cameras of the first multi-

camera module are in a first plane (Monroe, fig. 3B, row of cameras A; Ogiwara, fig. 7, cameras 2a-2d) and the optical axes of the multiple cameras of the second multi-camera modules are in a second plane (Monroe, fig. 3B, row of cameras B; Ogiwara, fig. 7, cameras 2e-2h), the first and second planes being parallel to each other and perpendicular to the direction of height. Grounds for rejecting claim 1 apply here.

Regarding claim 13, the combined teaching of Monroe in view of Ogiwara as applied to claim 1 teaches that each of the optical centers of the multiple cameras of the first multi-camera module is vertically aligned with one of the optical centers of the multiple cameras of the second multi-camera module (See Monroe, fig. 3B; Ogiwara, fig. 7).

Regarding claim 14, the combined teaching of Monroe in view of Ogiwara as applied to claim 1 teaches that the optical axis of each of the multiple cameras of the first multi-camera module (Monroe, fig. 3B, row of cameras A; Ogiwara, fig. 7, cameras 2a-2d) is parallel to the optical axis of a camera of the second multi-camera module (Monroe, fig. 3B, row of cameras B; Ogiwara, fig. 7, cameras 2e-2h) that is vertically aligned with that multiple camera of the first multi-camera module. Grounds for rejecting claim 1 apply here.

Regarding claim 15, limitations can be found in claim 14.

Regarding claim 16, the combined teaching of Monroe in view of Ogiwara as applied to claim 1 teaches that the plurality of multi-camera module includes a third multi-camera module at a third height (Monroe, fig. 3B teaches 3 multi-camera modules A, B and C).

6. Claims 9, 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogiwara, US Patent 6,057,878 in view of Iijima, US Patent 6,445,814 B2.

Regarding claim 9, Ogiwara discloses a method of acquiring 3-dimensional data, the method comprising: acquiring first images using a multi-camera module comprising multiple cameras, including using at least some of the multiple cameras (i.e. using cameras 2a-2d) with the optical centers in a first plane at a first height to acquire the first images; acquiring second images using the multi-camera module, including using at least some of the multiple cameras with the optical centers in a second plane at a second height (i.e. using cameras 2e-2h) to acquire the second images, the second plane being parallel to the first plane (Page 5, ¶ 0090-0091; page 6, ¶ 0092; page 7, ¶ 0102).

Ogiwara fails to teach searching corresponding points in one of the first images and in one of the second images; extracting distance information for the corresponding points using trigonometry; and acquiring 3-dimensional data based on the distance information.

However, Iijima teaches a three-dimensional image capturing device (Fig. 2) comprising: an image capturing processor (Fig. 2: 7) that obtains image data of a subject (Fig. 2: 2); a pair of image sensors (Figs. 3A, sensors 102R and 102L) for capturing two images of a subject with different point of view; a distance measurement data detecting processor (Fig. 2: 6) that based on two captured images, detects distances from said device to points on a surface of said subject by using trigonometric measurement on the basis of the relationship among corresponding points in said

captured images, a three-dimensional image data storing processor (Fig. 22: 220) that stores said image data and said distance measurement data in a recording medium (Fig. 22: 250) (Col. 10, lines 34-68; col. 12, lines 30-39; col. 12, line 63 – col. 13, line 19; col. 14, lines 15-44; col. 15, lines 1-52; col. 19, line 24 – col. 20, line 21; col. 22, lines 48-53, also col. 25, lines 15-35).

Therefore, taking the combined teaching of Ogiwara in view of Iijima as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ogiwara by using a distance measurement data detecting processor that, based on a pair of captured images, detects distances from said device to points on a surface of said subject by using trigonometric measurement on the basis of the relationship among corresponding points in said captured images to acquire 3-dimensional data. The motivation to do so would help to accurately obtain 3-D shape information data that can be output to a display so the viewer can observe and feel as if an actual object were present there as suggested by Iijima (Col. 4, lines 12-42; col. 5, lines 9-14 and 39-42; col. 7, lines 36-54; col. 32, lines 8-21).

Regarding claim 19, the combined teaching of Ogiwara in view of Iijima as applied to claim 9 teaches that each of the optical centers in the first plane is vertically aligned with one of the optical centers in the second plane (fig. 7 of Ogiwara teaches cameras 2a-2b are vertically aligned with cameras 2e-2h respectively).

Regarding claim 20, the combined teaching of Ogiwara in view of Iijima as applied to claim 9 teaches that the optical axis corresponding to each of the optical centers in the first plane (Ogiwara, fig. 7, cameras 2a-2d) is parallel to the optical axis

corresponding to one of the optical centers in the second plane (Ogiwara, fig. 7, cameras 2e-2h) that is vertical aligned with that optical center (See Ogiwara, cameras 2a and 2e in fig. 7).

Regarding claim 21, the combined teaching of Ogiwara in view of Iijima as applied to claim 9 teaches that the optical axes corresponding to the optical centers in the first plane are parallel to the optical axes corresponding to the optical centers in the second plane (Ogiwara, fig. 7, the optical centers of cameras 2a-2d are parallel to the optical centers of cameras 2e-2h).

Regarding claim 22, the combined teaching of Ogiwara in view of Iijima as applied to claim 9 teaches that the first plane and the second plane are perpendicular to the direction of height (See Ogiwara, cameras 2a and 2e in fig. 7).

Regarding claim 23, the combined teaching of Ogiwara in view of Iijima as applied to claim 9 teaches acquiring third images using the multi-camera module, including using at least some of the multiple cameras with the optical centers in a third plane at a third height to acquire the third images (by teaching that different configurations of cameras can be applied to change the size of the matrix of cameras of 5X3, 4X8, 10X10 and so on; col. 12, line 55 – col. 12, line 8).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbert, US Patent 6,323,858 in view of Schofield, US Patent 6,498,620 B2.

Regarding claim 10, Schofield discloses a method for extending the dynamic range of images comprising the steps of: acquiring for multiple images of an object, the multiple images being photographed by cameras (See cameras 14 and 16 in figs. 1, 4,

7, 21, 23 and 24) of a multi-camera module which have different exposures amounts (Col. 2, lines 7-35); selectively extracting regions in the multiple images, wherein the regions are included within the dynamic range of the cameras (Col. 22, lines 27-35); and acquiring for images of dynamic range extension, which are generated by composing the extracting regions (Col. 5, line 48 – col. 6, line 25; col. 22, lines 7-35).

Schofield fails to teach that the cameras are symmetrically arranged at a specific position in a plane, and which take charge of each allocating viewing calculated by 360° divided by the number of cameras.

However, Gilbert discloses an omni-directional image data acquisition apparatus (Figs. 2, 5A, 5B and 6), comprising: a multi-camera module (Figs, 5A, 5B and 6) constructed in a manner that a plurality of cameras are symmetrically arranged with a specific point in a plane (See figs. 5A and 5B), each of the cameras taking charge of each of divided angles such that the camera module can take an omni-directional continuous panoramic photograph of surrounding objects with the specific point; first frame grabbers (Fig. 6, FIFO memories 45a-45f) each of which is electrically connected to each of the cameras of the multi-camera module, to grab photographed images by frames; an exposure calculator (Control computer in fig. 1A: 20, controls the exposure for each camera by using the embedded controller in fig. 2: 48) electrically connected to the first frame grabbers, to calculate exposure of each camera, based on the grabbed images by frames; an exposure signal generator (Fig. 2: 48) electrically connected to each camera, to transmit information about the exposure as a signal on the basis of the exposure calculated by the exposure calculator; storage means (FIFO memories in fig.

2, items 47h-47j) electrically connected to the each first frame grabber, to store images photographed by the cameras according to photographing location and photographing time (storing the images in real time); and a trigger signal generator (Computer in fig. 4B: 20 is connected to the storage means in fig. 4B: 21, the exposure signal generator, the annotation entering unit, the trigger signal generator selectively transmits a trigger signal to the exposure signal generator so the cameras start to photograph the objects according to the trigger signal (Col. 3, line 42 – col. 5, line 38; col. 8, lines 16-65; col. 12, lines 6-45; col. 14, lines 55-67).

Therefore, taking the combined teaching of Schofield in view of Gilbert as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Schofield by having the cameras symmetrically arranged at a specific position in a plane, and which take charge of each allocating viewing calculated by 360° divided by the number of cameras. The motivation to do so would have been to produce images to represent an entire spherical panorama as suggested by Gilbert (Col. 2, lines 14-21).

8. Claims 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogiwara, US Patent 6,057,878 in view of Ray, US Patent 6,023,588.

Regarding claim 11, Ogiwara discloses an omni-directional and 3-Dimensional data acquisition apparatus (Fig. 7), comprising: a multi-camera module including multiple cameras that are arranged such that the optical centers of the cameras are in a plane (See fig. 7, optical centers of cameras 2a-2d are in a plane); and a vision computer system (3-dimensional image display part 4 with memory 3 as shown in fig. 7)

operatively connected to each of the multiple cameras of the multi-camera modules, the vision computer system being configured to process and store images acquired by the multiple cameras (Col. 5, line 38 – col. 6, line 45; col. 9, lines 1-24; col. 12, line 55 – col. 13, line 19).

Ogiwara fails to teach an elevator for elevating the multi-camera module vertically.

However, elevating at least one camera from a group of cameras so that the optical centers of at least one of the cameras is moved from the first plane to the second plane to capture first and second images is well known in the art as taught by Ray. Ray teaches a method and apparatus for capturing panoramic images with range data (Fig. 2), comprising a plurality of cameras (Fig. 2: 10 and 10'); an elevator mechanism (Fig. 2: 24); and an image processing computer (Fig. 3: 46) wherein said elevator elevates camera 10 so that the optical centers of the camera is moved from the first plane to the second to capture one of the images so that the image processing computer calculates the range data compose the captured images (Col. 4, lines 13-67; col. 5, lines 1-20).

Therefore, taking the combined teaching of Ogiwara in view Ray as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the three-dimensional image capturing device taught in Ogiwara by elevating the multi-camera module so that the optical centers of at least some of the cameras of the multi-camera module are moved from the first plane to the second plane to capture the first and second images. The motivation to do so would have been to

permit the determination of relative depth for points within the panoramic images as suggested by Ray (Col. 3, lines 39-46).

Regarding claim 24, the combined teaching of Ogiwara in view Ray as applied to claim 11 teaches that the optical axes of the multiple cameras of the multi-camera module are in the plane (See fig. 7, cameras 2a-2d and cameras 2e-2h).

9. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogiwara, US Patent 6,057,878 in view of Iijima, US Patent 6,445,814 B2 and further in view of Ray, US Patent 6,023,588.

Regarding claim 17, the combined teaching of Ogiwara in view of Iijima fails to teach elevating the multi-camera module so that the optical centers of at least some of the cameras of the multi-camera module are moved from the first plane to the second plane to capture the first and second images.

However, elevating at least one camera from a group of cameras so that the optical centers of at least one of the cameras is moved from the first plane to the second plane to capture first and second images is well known in the art as taught by Ray. Ray teaches a method and apparatus for capturing panoramic images with range data (Fig. 2), comprising a plurality of cameras (Fig. 2: 10 and 10'); an elevator mechanism (Fig. 2: 24); and an image processing computer (Fig. 3: 46) wherein said elevator elevates camera 10 so that the optical centers of the camera is moved from the first plane to the second to capture one of the images so that the image processing computer calculates the range data compose the captured images (Col. 4, lines 13-67; col. 5, lines 1-20).

Therefore, taking the combined teaching of Ogiwara in view of Iijima and further in view of Ray as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the three-dimensional image capturing device taught in Ogiwara by elevating the multi-camera module so that the optical centers of at least some of the cameras of the multi-camera module are moved from the first plane to the second plane to capture the first and second images. The motivation to do so would have been to permit the determination of relative depth for points within the panoramic images as suggested by Ray (Col. 3, lines 39-46).

Regarding claim 18, limitations can be found in claim 17.

10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogiwara, US Patent 6,057,878 in view of Ray, US Patent 6,023,588 and further in view of Monroe, US 2005/0207487 A1.

Regarding claim 25, the combined teaching of Ogiwara in view Ray fails to teach that the multiple cameras of the multi-camera module are symmetrically arranged about a center point in the plane.

However, Monroe discloses an omni-directional image acquisition apparatus (Fig. 2), comprising: a plurality of multi-camera modules positioned along the direction of height (See figs. 3A and 3B), each of the multi-camera modules (See fig. 3B, rows A, B and C) including multiple cameras (Fig. 3, cameras 10a-10h) that are arranged such that the optical centers of the multiple cameras are in a plane (i.e. cameras in row A), the multiple cameras of the multi-camera modules being further arranged such that the optical axis of the at least one of the multiple cameras from a first multi-camera module

of the multi-camera modules at a first height is pointing in the same direction as the optical axis of at least one of the cameras from a second multi-camera module of the multi-camera modules at a second height such that the optical axes are parallel (i.e. cameras 10c in rows A, B and C), wherein said multiple cameras of the multi-camera module are symmetrically arranged about a center point in the plane (See figs. 3 and 11A); and a vision computer system (MUX 13 with processor 16 as shown in fig. 2) operatively connected to each of the multi-cameras of the multi-camera modules, the vision computer system being configured to process and store images acquired by the multi-cameras (Page 5, ¶ 0090-0091; page 6, ¶ 0092; page 7, ¶ 0102).

Therefore, taking the combined teaching of Ogiwara in view Ray and further in view of Monroe as a whole, it would have been obvious to one or ordinary skill in the art at the time the invention was made to modify the omni-directional and 3-Dimensional data acquisition apparatus of Ogiwara by having the multiple cameras of the multi-camera module are symmetrically arranged about a center point in the plane. The motivation to do so would have been to provide full 360-degree panoramic images as suggested by Monroe (Page 2, ¶ 0024).

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbert, US Patent 6,323,858 B1 in view of Ogiwara, US Patent 6,057,878 and further in view of Endo, US Patent 6,335,754 B1.

Regarding **claim** 30, Gilbert discloses an omni-directional image data acquisition apparatus (Figs. 2, 5A, 5B and 6), comprising: a multi-camera module (Figs, 5A, 5B and 6) constructed in a manner that a plurality of cameras are symmetrically arranged with a

specific point in a plane (See figs. 5A and 5B), each of the cameras taking charge of each of divided angles such that the camera module can take an omni-directional continuous panoramic photograph of surrounding objects with the specific point; first frame grabbers (Fig. 6, FIFO memories 45a-45f) each of which is electrically connected to each of the cameras of the multi-camera module, to grab photographed images by frames; an exposure calculator (Control computer in fig. 1A: 20, controls the exposure for each camera by using the embedded controller in fig. 2: 48) electrically connected to the first frame grabbers, to calculate exposure of each camera, based on the grabbed images by frames; an exposure signal generator (Fig. 2: 48) electrically connected to each camera, to transmit information about the exposure as a signal on the basis of the exposure calculated by the exposure calculator; a plurality of light intensity sensors electrically connected to the exposure calculator to allow the exposure calculator to be able to calculate the exposure amount of each camera based on external light intensity (in col. 4, line 34 – col. 5, line 10, Gilbert discloses using one or a plurality of cameras to measure the external light intensity in order to calculate the exposure amount of each camera); storage means (FIFO memories in fig. 2, items 47h-47j) electrically connected to the each first frame grabber, to store images photographed by the cameras according to photographing location and photographing time (storing the images in real time); a GPS sensor (See col. 5, lines 27-38) to sense the photographing location; an annotation entering unit (See fig. 3B: 34c) electrically connected to the GPS sensor to calculate location and time corresponding to each frame based on sensed data of the GPS sensor, the annotation entering unit being electrically connected to the storage means

to enter the calculated location in each frame as annotation; and a trigger signal generator (Computer in fig. 4B: 20 is connected to the storage means in fig. 4B: 21, the annotation unit is part of the computer 20 (i.e. mouse, keyboard and also the GPS information is received by the computer)) electrically connected the storage means, the exposure signal generator, the annotation entering unit, the trigger signal generator selectively transmits a trigger signal to the exposure signal generator or the annotation entering unit in order that the cameras start to photograph the objects according to the trigger signal (Col. 3, line 42 – col. 5, line 38; col. 8, lines 16-65; col. 12, lines 6-45; col. 14, lines 55-67).

Gilbert fails to teach that the apparatus as a 3-Dimensional acquisition apparatus; that the apparatus comprises a plurality of multi-camera modules, that the GPS senses the photographing time, that the annotation unit enter the time and that the multi-camera module are vertically stacked and formed in at least two layers in the direction of height.

However, Ogiwara teaches a 3-dimensional apparatus (See fig. 1 and 7), comprising: a plurality of cameras (See fig. 7: 2a-2h) arranged such that the optical centers of the multiple cameras are in a plane (See cameras 2a-2d in fig. 7) and further arranged such that the optical axis of the at least one of the multiple cameras from a first multi-camera module of the multi-camera modules at a first height is pointing in the same direction as the optical axis of at least one of the cameras from a second multi-camera module of the multi-camera modules at a second height such that the optical axes are parallel (See cameras 2a and 2e in fig. 7); a memory (Fig. 7: 3); and a 3-

dimensional image display (Fig. 7: 4); wherein said 3-dimensional image display is configured to use the images captured by the multiple cameras to produce 3-D image data (Col. 5, line 38 – col. 6, line 45; col. 9, lines 1-24; col. 12, line 55 – col. 13, line 19).

Therefore, taking the combined teaching of Gilbert in view of Ogiwara as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Monroe by using the multiple cameras to produce 3-dimensional image data. The motivation to do so would have been to provide 3-dimensional image data to be displayed without the need of complex signal processing devices and that can be observed in a wide angle of visibility as suggested by Ogiwara (Col. 2, lines 51-58).

The combination of Gilbert in view of Ogiwara fails to teach that the GPS senses the photographing time and that the annotation unit enters the time.

However, Endo teaches a panoramic imaging system (See fig. 8), wherein a GPS senses the location data and the time data and the panoramic imaging system stores the time and location data with the image data in a hard disk (Col. 7, line 10 – col. 11, line 45).

Therefore, taking the combined teaching of Gilbert in view of Ogiwara and further in view of Endo as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image data acquisition by having a GPS senses the location data and the time data so the image data acquisition annotates the time of exposure to each image taken. The motivation to do so would

help identifying the images so as to be searched at a later time as suggested by Endo (Col. 8, lines 1-45).

Allowable Subject Matter

12. Claims 31 and 32 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 31, the main reason for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest a video camera electrically connected to the storage means via a second frame grabber for grabbing photographed moving pictures by frames, to the storage means a unique video clip corresponding to each image or image group to be stored in the storage means.

Regarding claim 32, the main reason for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest a distance sensor and a direction sensor for respectively sensing the distance and direction of the image photographed by each of the plurality of multi-camera modules.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez
Examiner
Art Unit 2612

NDHH
January 21, 2006

NGOC-YEN VU
PRIMARY EXAMINER